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ABSTRACT

Computer assisted career guidance (CACG) systems have been around for at least the past 20 years in career guidance centers. There are two types of systems: information retrieval and guidance interaction. This study investigated the effectiveness of DISCOVER in facilitating career decisions among college students. DISCOVER is a systematic career guidance system which consists of nine modules. In this study, the independent variables were: type of delivery, gender, classification, age, and grade point average. The dependent variables were Certainty and Indecisive Scores of the Career Decision Scale. College students (N=44) completed the Career Decision Scale and a Student Information Form. The design consisted of a pretest, posttest, and delayed posttest. Nine composite null hypotheses were tested and a total of 18 comparisons were made. Of these comparisons, none was statistically significant; therefore, no associations were found between the independent and dependent variables. There were no significant differences between those who used DISCOVER and those who did not. The results of this study appear to support the recommendations that the study should be replicated with a larger random sample, using a different instrument, using the total DISCOVER program, and with measures and motivation as dependent variables. (LLL)

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THE EFFECTIVENESS OF DISCOVER

being

A Thesis Presented to the Graduate Faculty
of the Fort Hays State University in
Partial Fulfillment of the Requirements for
the Degree of Master of Science

by

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Chair, Graduate Council

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Graduate Committee Approval

The Graduate Committee of Elaine Frances Engel hereby approves her thesis as meeting partial fulfillment of the requirements for the Master of Science degree at Fort Hays State University.

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"You are led through your lifetime by the inner learning creature, the playful spiritual being that is your real self. Don't turn away from possible futures before you're certain you don't have anything to learn from them. You're always free to change your mind and choose a different future, or a different past. You are never given a wish without also being given the power to make it come true."

Richard Bach

It is with the completion of this research project that I would like to thank several people for helping me find the power to make this wish come true:

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This thesis is dedicated to my parents: Darrell and the late Anita Engel - who taught me to be courageous.

ELAINE

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Abstract

The purpose of the researcher was to investigate the effectiveness of DISCOVER. The independent variables were: type of delivery, gender, classification, age and grade point average. The dependent variables were Certainty and Indecisive scores of the Career Decision Scale. The original sample consisted of 48 subjects. Four of the subjects did not complete the study. Of the 44 subjects, 12 were male and 32 were female. The instruments employed were the Career Decision Scale and a Student Information Form. The design consisted of a pretest, posttest, and delayed posttest. The study was conducted at Fort Hays State University, a four-year Liberal Arts college in Western, Kansas. Nine composite null hypotheses were tested. A total of 18 comparisons were made. Of the 18 comparisons made, none was statistically significant at the .05 level; therefore, no associations were found between any independent and dependent variables.

Introduction

An Overview

Computer assisted career guidance (CACG) systems have been around for at least the past 20 years in career centers (Harris, 1973). A computer can offer the counselor a tool that can be enhancing to the counseling process (Pyle, 1985). A survey conducted by the Association of Computer-Based Systems for Career Information (ACSCI, 1986) indicated that 4.5 million people were annually being served by computer-based career information delivery systems (Bloch & Kinnison, 1989). CACG systems have been integrated into the career centers for a variety of reasons: computers and individual counseling can provide clients with information about decision-making and occupations; computers can store information more effectively than counselors; by using computers, counselors have more time to focus on individual issues; and the use of computers is cost effective (Garis, 1982). Most career centers now have at least one computerized career information or guidance program (Johnston, Bucsher & Heppner, 1988). The following quotation from Garis and Harris-Bowlsby (1984) depicts the needs of current college students:

> College students in the process of career exploration need a variety of information as well as effective decision-making skills. They need an easily accessible, up-to-date, and reliable source of career information which is part of a comprehensive career development system; preferably, the system should be based upon a decision-making model that includes information about the self and relates it to the world of work. This need is often difficult to meet, as an unfavorable counselor-student ratio can make one-to-one assistance virtually impossible. (p. 7)

There are two types of systems: information retrieval and guidance interaction (Garis, 1982). Information systems provide search strategies through occupational and educational files and provide information about the options identified. There is no attempt to assist the user in learning about the self or about decision-making but this may happen indirectly. The purpose of information systems is to provide quality information. Two examples of information systems are Guidance Information Systems (GIS) and Career Information Systems (CIS).

Guidance systems help students to learn about themselves in terms of their interests, abilities, and values. They also help the user apply knowledge to vocational options. These systems can also search for

schools, jobs, and training programs based on the user's interest, abilities, and experiences. Example of guidance systems are SIGI and DISCOVER (Garis & Harris-Bowlsbey, 1984). During the early and mid 1970's, various computer assisted guidance systems were developed, implemented, and investigated. Super (1978) indicated that computer assisted guidance systems evolved from a progressive advancement of information storage (information systems) to counseling and career development storage (guidance systems). A number of computer guidance systems have been developed in the last 20 years.

DISCOVER

> Garis and Harris-Bowlsby (1984 cited:
>
> An additional guidance system was developed in the 1970s. With significant funding from the Office of Education and support from IBM, JoAnn Harris-Bowlsbey led the development of a line of DISCOVER products through the DISCOVER Foundation, now a part of The American College Testing Program (ACT). (p. 1)

DISCOVER has two versions: a secondary school form and a college/adult form. DISCOVER is a systematic career guidance system which consists of nine modules (see Appendix A). Users can access any of the modules at any time. Each module requires approximately 30 minutes for completion.

DISCOVER Evaluations

Types of delivery. Rayman, Bryson, and Harris-Bowlsbey (1978) ran a field test of the DISCOVER system with a random sample of 30 treatment and 30 control public school students. The treatment group received DISCOVER only. The subjects were required to complete all modules of the DISCOVER. The Assessment of Career Development and The Career Development Inventory were given as pretest/posttest to both the treatment and control groups. The differences in scores between experimental and control groups on the Assessment of Career Development and The Career Development Inventory were not statistically significant. A questionnaire was administered as a pretest/posttest to treatment subjects only. The treatment group was also given a follow-up interview. The follow-up interview indicated students were more confident of their educational and career plans after using the DISCOVER.

Garis (1982) studied DISCOVER's effect upon career planning. Sixty-seven subjects seeking counseling at the Career Development and Placement Center of The Pennsylvania State University were randomly assigned to three treatment conditions. The treatment conditions were the following: DISCOVER alone, individual career counseling, and individual career counseling with DISCOVER. A fourth group served as a control group. Over a five-week period, the subjects were

permitted to use their treatment as much as they selected. Subjects were pretested and posttested with four instruments. The instruments employed were the following: 1) Survey of Career Development, 2) Confidence and Progress in Educational/Career Planning questionnaires, 3) Alternative Generating and Information Gathering Behavior Log, and 4) Career Development Inventory. To evaluate the impact of different types of treatments, an analysis of covariance was conducted on scores of all dependent measures. All comparisons were tested at the .05 level of significance. Comparisons of mean scores from the Survey of Career Development indicated that all treatment groups obtained statistically significant higher scores than the control group. No significant differences were found among the DISCOVER, counseling, or DISCOVER/counseling conditions combined. Comparisons of the mean scores from the Confidence and Progress in Educational/Career Planning questionnaire revealed that all treatment group means were significantly greater than the control group. No statistically significant differences were found among the DISCOVER, counseling or DISCOVER/counseling conditions combined.

A complete analysis of variance from the Alternative-Generating and Information Gathering Behavior (Part I) indicated that the DISCOVER condition mean score was

statistically higher than that of the control condition. Also, the mean score of the DISCOVER/counseling condition was statistically higher than that of the control. The counseling condition mean score, however, was not statistically significant from the control or other treatment groups. No statistical differences were found among the mean scores of the DISCOVER and the combined DISCOVER/counseling condition. An analysis of covariance was used to test the significance of the effects of treatment groups on posttest mean scores from Part II of the Alternative-Generating and Information Gathering Behavior Log. The counseling condition mean scores were statistically higher than that of the control and DISCOVER conditions. Also, the DISCOVER/counseling condition mean scores were statistically significant when compared with the DISCOVER condition. The mean scores for the Career Development Inventory found statistically significant differences between all treatment groups and the control group.

Glaize and Myrick (1984) studied the effectiveness of DISCOVER with facilitating career maturity and career decidedness. One-hundred and four 11th grade Florida students were randomly selected from five high schools. The four types of delivery were: 1) vocational exploration group alone; 2) DISCOVER alone; 3) VEG with DISCOVER; and

4) a control group. The measurements employed were: The Career Maturity Inventory Attitude Scale, The Career Decision Scale, and a student attitude inventory that was developed by the researchers. A multivariate analysis was used to test the differences among the four types of delivery. The analysis for the Career Maturity Inventory Attitude Scale indicated statistically significant differences for each of the three delivery types when compared to the control group. No statistically significant differences occurred among the three delivery types. Data for the Career Decision Scale indicated statistically significant differences for each of the three delivery types when compared to the control. No statistical differences were found among the three delivery types. No statistically significant differences were found on the remaining dependent variables; therefore, no further analyses were performed.

Fukuyama, Probert, Neimeyer, Nevill, and Metzler (1988) conducted a study to determine if the use of DISCOVER would reduce career indecision and enhance students' certainty about which career to pursue. Results indicated that the DISCOVER only group had a positive effect on career decision-making. Seventy-seven students from a psychology course were randomly assigned to either an experimental group or a control group. A pretest/posttest design was

used. The instruments used were The Career Decision Making Self-Efficacy Scale and The Career Decision Scale. Results of the Career Decision-Making Self-Efficacy Scale scores revealed statistically significant interactions between group and time. Participants in the DISCOVER group increased their levels of career self-efficacy from the pretest to the posttest. The control group remained stable from the pretest to the posttest.

Gender and type of delivery. Miller, Karrider and Springer (1986) attempted to extend previous research by comparing DISCOVER and a self-directed search. The participants in this study were 40 undergraduate university students from a general psychology class. All subjects participated in both treatments. Immediately following the treatments, the subjects were asked to fill out a Feedback Sheet and a Research Questionnaire. The subjects were asked to rate the two treatments. An analysis of variance was employed. The results indicated no statistical difference in response due to gender or type of delivery. The mean scores indicated that both the DISCOVER and self-directed search received favorable ratings. The DISCOVER was rated higher than the self-directed search. The authors maintained this outcome was due to DISCOVER being more fun.

Gender and grade point average. Alston and Burkhead (1989) examined the effect of DISCOVER on career indecision

of disabled college students. The independent variables investigated were: gender, type of disability, age of onset of disability and grade point average. The subjects were 50 physically disabled undergraduate students from Florida State University, Florida A & M University, and Tallahassee Community College. The two instruments used were The Personal Data Sheet and The Career Decision Scale. A posttest only control group design was employed. The intervention consisted of the completion of three modules within a four-week interval. Each subject was randomly assigned to either the DISCOVER treatment or the control. A three-way analysis of variance resulted in no statistically significant differences in the level of career indecision according to group membership, gender and type of disability. No statistically significant interaction was found. No associations were found between career indecision, age of onset of disability, and grade point average.

Classification. No studies were found pertaining to classification.

Age. No studies were found pertaining to age.

Summary

Two studies supported that research results pertaining to type of delivery indicated DISCOVER only, counseling only, and the combined approach yield changes significantly

greater than these in the control group. The studies indicated research results found no association.

Statement of the Problem

The purpose of the researcher was to investigate the effectiveness of DISCOVER in facilitating career decisions among college students.

Importance of the Research

A review of the related literature indicated that numerous studies had been conducted pertaining to DISCOVER. The results found in the literature pertaining to the effectiveness of DISCOVER in facilitating career decisions appeared to be inconclusive. This exploratory study generated information pertaining to the association between career decisions and the use of DISCOVER.

The results of the present study could be of utility to a number of practitioners in career centers to help clients assess their abilities, interests, and experiences. Results could also help these practitioners guide their clients into career areas that may prove to be rewarding. High school counselors will find that results could help high school students identify areas of interest. Also, students could research colleges to decide which college will best meet their needs.

The results from the present study provided information pertaining to the following questions:

1. Is there an association among types of delivery, use of DISCOVER and career decisions?
2. Is there an association among gender, the use of DISCOVER, and career decisions?
3. Is there an association among classification, the use of DISCOVER, and career decision?
4. Is there an association among age, the use of DISCOVER, and career decision?
5. Is there an association among grade point average, use of DISCOVER, and career decision?

Composite Null Hypotheses

All hypotheses were tested at the .05 level of significance.

1. The differences among the adjusted post mean Career Decision Scores (pretest scores as the covariant measure) according to types of delivery will not be statistically significant.
2. The difference between the adjusted post mean Career Decision scores (pretest scores as the covariant measure) for those who participated according to gender will not be statistically significant.
3. The differences between the adjusted delayed post mean Career Decision scores (pretest scores as the covariant measure) for those who participated

according to gender will not be statistically significant.

4. The differences among the adjusted post mean Career Decision scores (pretest scores a the covariant measure) for those who participated according to classification will not be statistically significant.
5. The differences among the adjusted delayed post mean Career Decision scores (pretest scores as the covariant measure) for those who participated according to classification will not be statistically significant.
6. The difference between the adjusted post mean Career Decision scores (pretest scores as the covariant measure) for those who participated according to age will not be statistically significant.
7. The difference between the adjusted delayed post mean Career Decision scores (pretest scores as the covariant measure) for those who participated according to age will not be statistically significant.
8. The differences among the adjusted post mean Career Decision scores (pretest scores as the covariant measure) for those who participated according to

grade point average will not be statistically significant.

9. The differences among the adjusted delayed post mean Career Decision scores (pretest scores as the covariant measure) for those who participated according to grade point average will not be statistically significant.

Definitions of Variables

Independent Variables

1. Type of Delivery - 4 levels:
   a) DISCOVER only,
   b) DISCOVER with analysis,
   c) DISCOVER, analysis, and career guidance, and
   d) control group
2. Gender - 2 levels:
   a) male, and
   b) female
3. Classification - 4 levels determined post hoc:
   a) freshman,
   b) sophomore,
   c) junior, senior, graduate, and
   d) other
4. Age - 2 levels:
   a) traditional (18-24), and
   b) nontraditional (25 and above)

5. Grade Point Average - 3 levels determined post hoc:
   a) 1.00 - 2.99
   b) 3.00 - 4:00 and
   c) other

Dependent Variables

The dependent variables were:

1. scores from the Certainty scale of the Career Decision Scale (2 items; possible scores 2-8).
2. scores from the Indecisive scale of the Career Decision Scale (16 items; possible scores 16-64).

Limitations

The following may have affected the outcome of the present study:

1. subject were volunteers from a Human Growth and Development class and from individuals who came to utilize the DISCOVER services;
2. all subjects were from a single university in the Midwest;
3. the subjects were not randomly selected;
4. some groups were small; and
5. time lapse between the posttest and delayed posttest was only two weeks.

Methodology

Setting

The study was conducted at a western Kansas university. Fort Hays State University is the only four year University in the western half of the state. Its emphasis is on Liberal Arts Education. The university opened June 23, 1902, with 34 students, 2 faculty members and 19 courses. At the time of the study, the university had grown to accommodate the needs of approximately 5,500 students. Fort Hays State University is located in Hays, Kansas. Hays is a city of approximately 18,000 people located on Interstate 70 about halfway between Denver, Colorado and Kansas City, Kansas ("Fort Hays," 1989).

Subjects

The subjects of this study were students enrolled in a Human Growth and Development course at Fort Hays State University during the spring semester of 1991 and individuals utilizing the DISCOVER services. The original sample consisted of 48 students. Each subject was assigned to a group in the order in which they arrived. Grouping occurred as follows: the first subject to Group One (DISCOVER only), the second subject to Group Two (DISCOVER with analysis), the third subject to Group Three (DISCOVER, analysis, and career counseling), the fourth subject to Group Four (control), and the fifth subject back to Group

One. Each group contained 11 subjects. Of the original 48 subjects, four did not complete the study. Of the 44 subjects, 12 were male, and 32 were female.

Instrumentation

Two instruments were employed: the Career Decision Scale and a Student Information Form.

Career Decision Scale

The Career Decision Scale was developed by Osipow (1986). The instrument was published by the Psychological Assessment Resource, Inc. The Career Decision Scale was derived from a rationale that a number of problems prevent people from reaching closure for educational and vocational decisions. The scale was intended to be a rapid, reliable instrument for surveying high school and college students of both sexes about their status in the decision making process. The instrument can be administered either individually or in groups and is composed of 19 items. The first 18 require self-ratings. These 18 items are of the Likert-type. Response ratings range from one to four. A rating of one indicates low similarity and a rating of four indicates high similarity. Item 19 is an open ended item which provided the subject an opportunity to clarify or expand on prior items. Items one and two comprise the Certainty scale. Items 3-18 constitute the Indecision scale (Osipow, 1986).

Test-retest reliability was studied by Osipow, Carney, and Barak (cited by Osipow, 1986). They reported test-retest reliability for the Indecision scale rated from .82 to .90. Item correlation for the Certainty and Indecision scales ranged from .34 to .82, with the majority of the correlation coefficient falling in the .62 to .80 range. Slancy, PolkoNonemaker, and Alexander (cited in Osipow, 1986) reported test-retest reliabilities over a six week period for the Certainty and Indecision Scale items. They reported correlation coefficients ranging from .19 to .70 and a .70 for the total Career Decision Scale. Research pertaining to the validity of the scale was cited by Osipow (1986, p. 8):

> The Career Decision Scale has been employed in a large number of studies which have examined, directly or indirectly, various aspects of its validity. These studies generally fall into four major methodological approaches: group comparisons and correlations with instruments measuring the construct of indecision, treatment studies, relationships with other personality variables of interest, and relationships with demographic variables. In summary, these studies have supported the validity of the Career Decision Scale.

Osipow, Carney and Barak (cited by Osipow, 1986) reported

results from treatment studies employing the Career Decision Scale. They concluded:

> The results provided support for the hypothesis that groups exposed to treatment for vocational indecision would be less undecided than before treatment. Lower post-test scores were found for treated groups than for groups not treated. The series of studies thus indicated the potential sensitivity of the instrument for identifying changes brought about through interventions designed to reduce career decisions. (p. 8)

Student Information Form

The student information form was developed by the researcher and contained 8 items. The subjects were asked to identify the following: name, social security number, phone number, major, classification, age, gender, and grade point average (Appendix B).

Design

The design consisted of a pretest, posttest, and delayed posttest. The independent variables were: types of delivery, gender, classification, age, and grade point average. The dependent variables were: the certainty and the indecisive scores of the Career Decision Scale. The following designs were employed with the composite null hypotheses:

composite null hypothesis Number One: A pretest-posttest four group design;

composite null hypothesis Number Two: A pretest/posttest two group design;

composite null hypothesis Number Three: A pretest/delayed posttest two group design;

composite null hypothesis Number Four: A pretest/posttest four group design;

composite null hypothesis Number Five: A pretest/delayed posttest four group design;

composite null hypothesis Number Six: A pretest/posttest two group design;

composite null hypothesis Number Seven: A pretest/delayed posttest two group design;

composite null hypothesis Number Eight: A pretest/posttest three group design;

composite null hypothesis Number Nine: A pretest/delayed posttest three group design.

McMillan and Schumacker (1984) cited 10 threats to internal validity. The threats were dealt with in the following ways:

1. history - pretest scores were employed as covariant measures;
2. selection - the researcher adjusted post mean scores and analyzed data with an analysis of covariance;

3. statistical regression - subjects were not selected on the basis of extreme scores;
4. testing - the same test was administered under standard procedures three times;
5. instrumentation - the same test was administered under standard procedures three times;
6. mortality - pretest/posttest design was employed; two weeks elapsed between testings;
7. maturation - two weeks elapsed between posttest and delayed posttest;
8. diffusion of treatment - someone other than the researcher provided the treatment;
9. experimental bias - someone other than the researcher provided the treatment; and
10. statistical conclusion - the assumption of randomized placement was violated, and no projecting beyond the statistical procedure was employed.

McMillan and Schumacher (1984) cited two threats to external validity. The threats were dealt with in the following ways:

1. population--random placement was not possible, and
2. ecological--subjects were aware that they were participating in research and the researcher did

not generalize beyond the statistical procedures employed.

Implementation

The implementation consisted of three operations: DISCOVER, analysis, and career counseling. All subjects were given a pretest prior to taking the DISCOVER and a posttest after the treatment. All groups (except the control) were given a delayed posttest two weeks following the posttest. The original sample consisted of 48 subjects and of the original 48 four did not complete the study.

DISCOVER

DISCOVER is a systematic career guidance treatment based on a decision theory model that consists of nine modules of content. Users can access any or all of the nine modules at any time. Subjects assigned to the DISCOVER condition were oriented to the system's content and instructed in its use. Subjects completed modules three and four for this study (Self-guided search and career information). Subject were given a printout summarizing their individual outcome (Appendix C).

Analysis

In the analysis the counselor explained the DISCOVER program and interpreted the results of the printout. This interaction consisted of a standardized set of information which included: discussing how the client rated values,

interests, and experiences. Additionally, the interaction included describing the world-of-work map (Appendix D).

Career Counseling

The career counseling interaction consisted of a one-hour counseling appointment with a counselor. Only one counselor was used to minimize the chance of various counseling techniques affecting the outcome. Career counseling included: assisting subjects in clarifying their self-concept, helping subjects identify with their interests, and assisting them in developing decision-making skills.

Homework

Homework was recommended to all subjects who encountered the career counseling condition. The homework assignments consisted of the following: informational interviews, career or job research, and individuals focusing on their goals. For the purpose of this study, homework assignments were not monitored.

Data Collecting Procedures

The researcher asked for permission (Appendix E) to administer the instruments and DISCOVER to subjects who were voluntary and seeking DISCOVER services. Permission was granted (Appendix F). When the subjects arrived they were asked if they would like to participate in the study. Those who did were systematically assigned to one of four groups.

For example, the first subject was assigned to Group One (DISCOVER only), the second subject assigned to Group Two (DISCOVER with analysis), the third assigned to Group Three (DISCOVER, analysis, and career guidance), and the fourth to a control group. Two instruments were administered: the Student Information Form and the Career Decision Scale. Group One was given the instruments as a pretest and posttest and the DISCOVER as a treatment. Group Two received the pretest; DISCOVER with an analysis; and after one hour lapsed, a posttest was administered. Group Three received the pretest, DISCOVER, analysis and then met immediately with the counselor for career counseling. After a one-hour session with a counselor was completed, a posttest was administered. Group Four took a pretest and a posttest without any treatment. The researcher then scored the Career Decision Scale, had the data computer-analyzed, and compiled the final report. The data were analyzed on a mainframe computer on the campus of Fort Hays State University. The statistical package used was the Statistical Analysis System (SAS).

Research Procedures

The following procedures were implemented:

1. the researcher conducted a computer search using the ERIC and PSYCLIT databases located at the Forsyth Library at Fort Hays State University;

2. the American College Testing Program was contacted for information and research pertaining to the use of the DISCOVER program;
3. literature pertaining to computer assisted career planning and DISCOVER was reviewed;
4. an instrument was selected;
5. special permission was given to proceed in administering pretest/posttests and delayed posttests;
6. a research proposal was developed, defended, and permission was granted to proceed with the data collecting;
7. data were collected;
8. the data were analyzed by the computing center at Fort Hays State University;
9. the thesis was written, presented and defended; and
10. final editing of the thesis.

Data Analysis

The following were compiled:

1. appropriate descriptive statistics,
2. one-way analysis of covariance, and
3. least square test for means.

Results

The purpose of the researcher was to investigate the effectiveness of DISCOVER. Independent variables were:

types of delivery, gender, classification, age, and grade point average. The dependent variables were Certainty and Indecisive scores of the Career Decision Scale. The original sample consisted of 48 subjects and out of that original sample, only four did not complete the study. Of the 44 subjects, 12 were male and 32 were female. The instruments employed were the Career Decision Scale and the Student Information Form. The design consisted of a pretest, posttest, and delayed posttest. The results section was organized according to composite null hypothesis for ease of reference. Information pertaining to each composite null hypothesis was presented in a common format for ease of comparison.

It was hypothesized in composite null hypothesis number one that the differences among the adjusted posttest mean Career Decision Scores (pretest scores as the covariate measure) according to types of delivery would not be statistically significant. Information pertaining to composite null hypothesis number one was presented in Table 1. The following information was cited in Table 1: variables, sample sizes, pretest score means, pretest score standard deviations, posttest score means, posttest score standard deviations, adjusted posttest score means, *F* values, and *p* levels.

Table 1

A Comparison of Adjusted Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Type of Delivery Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted posttest M	F value	p level
				Certainty				
Type of Delivery								
1**	11	5.9*	2.47	6.4	2.11	6.0		
2	11	4.2	2.18	4.7	1.68	5.5		
							1.02	.3956
3	11	4.5	1.92	4.6	1.57	5.3		
4	11	6.8	1.25	6.6	1.21	5.6		
			Homogeneity of Regression				0.89	.4562
				Indecision				
Type of Delivery								
1	11	22.5	6.25	23.5	7.81	30.3		
2	11	34.4	7.58	36.8	6.59	33.3		
							1.11	.3563
3	11	34.5	5.65	35.4	8.54	31.8		
4	11	30.0	8.85	29.1	8.78	29.4		
			Homogeneity of Regression				1.12	.3538

* The larger the score the greater the amount.
**1=DISCOVER only; 2=DISCOVER with analysis; 3=DISCOVER, analysis, and career counseling; and 4=no delivery (control).

Neither of the two p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in Table 1 indicated no association between the type of delivery and adjusted posttest Career Decision Scale scores. The assumption of homogeneity of regression was met.

It was hypothesized in composite null hypothesis number two that the differences among the adjusted posttest mean Career Decision Scores (pretest scores as the covariate measure) for those who participated according to gender would not be statistically significant. Information pertaining to composite null hypothesis number two was presented in Table 2. The following information was cited in Table 2: sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted posttest means, F values, and p levels.

Table 2

A Comparison of Adjusted Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Gender Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted posttest M	F value	p level
				Certainty				
Gender								
Female	24	5.4*	2.30	5.7	1.86	5.3		
							0.19	.6627
Male	9	3.4	1.51	4.1	1.69	5.1		
				Homogeneity of Regression				
							0.16	.6876
				Indecision				
Gender								
Female	24	28.8	8.70	30.2	9.92	31.6		
							0.18	.6723
Male	9	34.7	6.80	36.4	7.25	32.6		
				Homogeneity of Regression				
							0.05	.8324

* The larger the score the greater the amount.

Neither of the p values were statistically significant at the .05 level; therefore, the null hypothesis for these two comparisons were retained. The information cited in

Table 2 indicated no association between gender (for those who participated) and posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met.

It was hypothesized in composite null hypothesis number three that the differences among the adjusted delayed posttest mean Career Decision scores (pretest scores as the covariate measure) for those who participated according to gender would not be statistically significant. Information pertaining to composite null hypothesis number three was presented in Table 3. The following information was cited in Table 3: variables, sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted delayed posttest means, F values, and p levels.

Table 3

A Comparison of Adjusted Delayed Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Gender Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted delayed posttest M	F value	p level
				Certainty				
Gender								
Female	24	5.4*	2.30	5.9	1.98	5.6		
							1.84	.1854
Male	9	3.4	1.51	4.1	0.93	4.8		
				Homogeneity of Regression				
							0.26	.6170
				Indecision				
Gender								
Female	24	28.8	8.70	29.4	9.10	30.6		
							0.20	.6549
Male	9	34.7	6.80	35.2	9.54	31.9		
				Homogeneity of Regression				
							0.82	.3739

*The larger the score the greater the amount.

Neither of the p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in

Table 3 indicated no association between gender (for those who participated) and adjusted delayed posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met.

It was hypothesized in composite null hypothesis number four that the differences among the adjusted posttest mean Career Decision scores (pretest scores as the covariate measure) for those who participated according to classification would not be statistically significant. Information pertaining to composite null hypothesis number four was presented in Table 4. The following was cited in Table 4: variables, sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted delayed posttest means, F values, and p levels.

Table 4

A Comparison of Adjusted Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Classification Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted posttest M	F value	p level
				Certainty				
Classification								
Freshman	7	4.4*	3.05	4.9	2.60	5.7		
Sophomore	9	5.4	2.07	5.8	2.11	5.3		
							0.08	.9722
Junior, Senior, & Graduate	8	5.9	2.03	5.9	1.36	5.1		
Other	9	3.7	1.58	4.4	1.42	5.3		
				Homogeneity of Regression			0.89	.4608
				Indecision				
Classification								
Freshman	7	29.4	11.56	32.0	11.55	32.9		
Sophomore	9	29.2	9.54	30.0	10.90	31.1		
							0.48	.6998
Junior, Senior, & Graduate	8	29.0	7.48	29.1	8.11	30.4		
Other	9	33.7	5.92	36.2	7.63	33.3		
				Homogeneity of Regression			2.58	.0764

* The larger the score the greater the amount.

Neither of the p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in Table 4 indicated no association between the classification and adjusted delayed posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met.

It was hypothesized in composite null hypothesis number five that the differences among the adjusted delayed posttest mean Career Decision Scores (pretest scores as the covariate measure) for those who participated according to classification would not be statistically significant. Information pertaining to composite null hypothesis number five was presented in Table 5. The following are cited in Table 5: variables, sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted delayed posttest means, F values and p levels.

Table 5

A Comparison of Adjusted Delayed Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Classification Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted delayed posttest M	F value	p level
				Certainty				
Classification								
Freshman	7	4.4*	3.05	5.8	1.81	5.8		
Sophomore	9	5.4	2.07	6.1	1.90	5.8		
							0.67	.5754
Junior, Senior, & Graduate	8	5.9	2.03	5.8	1.98	5.2		
Other	9	3.7	1.58	4.3	1.80	5.0		
				Homogeneity of Regression			2.89	.0552
				Indecision				
Classification								
Freshman	7	29.4	11.56	28.6	8.88	29.6		
Sophomore	9	29.2	9.54	30.4	12.67	31.4		
							0.22	.8789
Junior, Senior, & Graduate	8	29.0	7.48	29.1	8.49	30.3		
Other	9	33.7	5.92	34.8	7.10	32.2		
				Homogeneity of Regression			3.79	.0228

* The larger the score the greater the amount.

Neither of the p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in Table 5 indicated no association between classification (for those who participated) and adjusted delayed posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met for the dependent variable Certainty and not for the dependent variable Indecision.

It was hypothesized in composite null hypothesis number six that the differences among the adjusted posttest mean Career Decision scores (pretest scores as the covariate measure) for those who participated according to classification would not be statistically significant. Information pertaining to composite null hypothesis number six was presented in Table 6. The following information was cited in Table 6: variables, sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted means, F values, and p levels.

Table 6

A Comparison of Adjusted Post Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Age Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted posttest M	F value	p level
				Certainty				
Age								
Traditional (18-24)	22	5.3*	2.25	5.5	2.01	5.1		
							0.57	.4549
Nontraditional (25 & above)	11	4.0	2.14	4.8	1.72	5.4		
				Homogeneity of Regression			1.00	.3247
				Indecision				
Age								
Traditional (18-24)	22	29.5	8.97	30.3	9.48	31.2		
							1.05	.3130
Nontraditional (25 & above)	11	32.4	7.62	35.1	9.41	33.4		
				Homogeneity of Regression			2.41	.1315

* The larger the score the greater the amount.

Neither of the p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in Table 6 indicated no association between age (for those who participated) and adjusted posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met.

It was hypothesized in composite null hypothesis number seven that the differences among the adjusted delayed posttest mean Career Decision scores (pretest scores as the covariate measure) for those who participated according to age would not be statistically significant. Information pertaining to composite null hypothesis number seven was presented in Table 7. The following information was cited in Table 7: variables, sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted delayed posttest means, F values, and p levels.

Table 7

A Comparison of Adjusted Delayed Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Age Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted delayed posttest M	F value	p level
				Certainty				
Age								
18-24	22	5.3*	2.25	5.7	1.84	5.4		
							0.00	.9453
25 & above	11	4.0	2.14	4.9	2.07	5.4		
				Homogeneity of Regression				
							1.69	.2043
				Indecision				
Age								
18-24	22	29.5	8.97	29.5	9.62	30.3		
							0.74	.3980
25 & above	11	32.4	7.62	33.9	8.79	32.4		
				Homogeneity of Regression				
							3.02	.0927

* The larger the score the greater the amount.

Neither of the p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in Table 7 indicated no association between age (for those who participated) and adjusted delayed posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met.

It was hypothesized in composite null hypothesis number eight that the differences among the adjusted posttest mean Career Decision scores (pretest scores as the covariate measure) for those who participated according to grade point average would not be statistically significant. Information pertaining to composite null hypothesis number eight was presented in Table 8. The following information was cited in Table 8: variables, sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted delayed posttest means, F values, and p levels.

Table 8

A Comparison of Adjusted Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Grade Point Average Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted posttest M	F value	p level
				Certainty				
Grade Point Average								
1.00-2.99	14	4.7*	2.40	4.7	2.00	4.8		
3.00-4.00	9	5.7	2.30	6.2	1.85	5.6	1.89	.1692
other	10	3.8	1.75	4.4	1.43	5.1		
				Homogeneity of Regression			0.15	.8639
				Indecision				
Grade Point Average								
1.00-2.99	14	32.0	8.63	31.9	8.27	30.6		
3.00-4.00	9	27.6	9.94	27.1	10.01	29.5	6.23	.0056
other	10	32.9	5.38	38.6	5.96	36.5		
				Homogeneity of Regression			0.08	.9230

* The greater the score the greater the amount.

Neither of the p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in Table 8 indicated no association between the grade point average and adjusted posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met.

It was hypothesized in composite null hypothesis number nine that the differences among the adjusted delayed posttest mean Career Decision Scores (pretest scores as the covariate measure) for those who participated according to grade point average would not be statistically significant. Information pertaining to composite null hypothesis number nine was presented in Table 9. The following information was cited in Table 9: variables, sample sizes, pretest means, pretest standard deviations, posttest means, posttest standard deviations, adjusted delayed posttest means, F values, and p levels.

Table 9

A Comparison of Adjusted Delayed Posttest Mean Career Decision Scale Scores (Pretest Scores as the Covariate Measure) According to Grade Point Average Employing a One-way Analysis of Covariance

Variable	n	pre-test M	pre-test S	post-test M	post-test S	adjusted delayed posttest M	F value	p level
Grade Point Average								
1.00-2.99	14	4.7*	2.40	5.0	1.58	5.1		
3.00-4.00	9	5.7	2.30	6.5	2.03	6.1	2.54	.0966
other	10	3.8	1.75	4.3	1.25	4.8		
			Homogeneity of Regression				0.97	.3926
			Indecision					
Grade Point Average								
1.00-2.99	14	32.0	8.63	32.2	10.02	31.1		
3.00-4.00	9	27.6	9.94	26.3	9.69	28.3	2.81	.0765
Other	10	32.9	5.38	36.4	4.90	34.6		
			Homogeneity of Regression				0.86	.4337

*The greater the score the greater the amount.

Neither of the p values was statistically significant at the .05 level; therefore, the null hypotheses for these two comparisons were retained. The information cited in Table 9 indicated no association between grade point average (for those who participated) and adjusted delayed posttest Career Decision Scale scores. Note, the assumption of homogeneity of regression was met.

Discussion

The purpose of the researcher was to investigate the effectiveness of DISCOVER. The independent variables were: type of delivery, gender, classification, age and grade point average. The dependent variables were the Certainty and Indecisive scores of the Career Decision Scale. The original sample consisted of 48 subjects. Four of the subjects did not complete the study. Of the 44 subjects, 12 were male and 32 were female. The instruments employed were the Career Decision Scale and a Student Information Form. The design consisted of a pretest, posttest, and delayed posttest. The study was conducted at Fort Hays State University, a four-year Liberal Arts college in western Kansas. Nine composite null hypotheses were tested. A total of 18 comparisons were made. None of the comparisons were statistically significant at the .05 level; therefore, no associations were found between any independent and dependent variables.

The results of this study supported the findings of Rayman, Bryson and Harris-Bowlsbey (1978), Garis (1982), and Alston and Burkhead (1989). The findings reported by these researchers showed no statistically significant differences at the .05 level between those who participated in using the DISCOVER and those who did not.

Further, the results of this study did not support the findings of Glaize and Myrick (1984), and Fukuyama, Probert, Neimeyer, Nevill, and Metzler (1988). Their findings indicated a statistically significant (.05) difference between those who had used DISCOVER and those who did not.

In the opinion of the researcher, no differences were found because several limitations of the study may have affected the results. A larger, randomized sample might have increased the internal and external validity of the present study.

The results of the present study indicated no effects or associations between or among any variables.

In the opinion of the researcher, it would further indicate that the effectiveness of DISCOVER is based on the subject utilization of all treatments. Client fallout prior to the full utilization of all DISCOVER modules will probably not enhance their growth with career decidedness.

The results of the present study appeared to support the following recommendations:

1. the study should be replicated with a larger, random sample,

2. the study should be replicated with a different instrument,

3. the study should be replicated using the total DISCOVER program, and

4. the study should be replicated with measures and motivation as dependent variables.

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Appendix A

DISCOVER Module

DISCOVER Modules

Module 1: Beginning the Career Journey. This module assesses the user's personal level of career development.

Module 2: Learning about the World-of-Work. This module introduces the user to the world-of-work map which organizes over 13,000 occupations into regions. It also allows the user to explore these occupations based on their choice of region.

Module 3: Learning about Yourself. This module assesses the user's interests, abilities, and experiences by having the user complete the inventories.

Module 4: Finding Occupations. This module will help the user find occupations that are based on the map region, their inventories taken in module three, and the level of education that the user would be willing to complete.

Module 5: Learning about Occupations: This module provides detailed information about occupations that the user selects to review. This information includes: work tasks, training, salary and employment outlook for the future.

Module 6: Making Educational Choices. This module will help the user choose a path of training and program of study for future occupations.

Module 7: Planning Next Steps. This module will provide the user with information about schools, sources of financial aid and job-seeking skills.

Module 8: Planning Your Career. This module defines "career" by changing roles that the user plays everyday and will play in the future.

Module 9: Making Transitions. This module will help the user understand that a career is a series of transitions.

Appendix B

Student Information Form

STUDENT INFORMATION FORM

Name _____ Social Security # _____

Phone # _____ Major _____

CLASSIFICATION:

Freshman _____ Sophomore _____

Junior _____ Senior _____

Graduate _____ Other _____

AGE:

18-24 _____

25-Above _____

GENDER:

Male _____

Female _____

GRADE POINT AVERAGE:

1.00 - 1.49	_____
1.50 - 1.99	_____
2.00 - 2.49	_____
2.50 - 2.99	_____
3.00 - 3.49	_____
3.50 - 4.00	_____
other	_____

* *

FOR CAREER DEVELOPMENT & PLACEMENT

Pretest Date _____ DISCOVER Date _____

Follow Up Date _____ Posttest Date _____

Delayed Posttest Date _____ Assigned Group # _____

Appendix C

Summary of Your Use of Discover

Summary of Your Use of Discover

Your id number:
Name:
Counselor code: 0

Modules used to date: 3 4

The following is a list of inventories you have done in Module 3 and the World-of-Work Map regions each inventory generated. (Appendix F)

Interest inventories	Regions
UNIACT interest inventory	6 7 8

Abilities inventories	Regions
	4 5

Experience inventories	Regions
Your experiences inventory	2 3 4

Values inventory and your ratings:

Creativity - Medium
Recognition - High
Helping Others - High
Economic Security - High
Working with People - High
Variety - High
Independence - High
Responsibility - Medium
Earnings - Medium

Present educational plans you selected in Module 4:
Graduate work (M.A. or above)

You have the following occupations in your record:

#	EDlevel	Family	Title
104	5	U	COUNSELOR (EMPLOYMT)
105	5	V	COUNSELOR (REHAB.)
106	5	U	COUNSELOR (SCHOOL/COLL)
120	5	N	DENTIST
141	5	B	EDUCATIONAL ADMIN.
198	5	B	HEALTH SERVICES ADMIN.
221	5	N	INTERNIST
297	5	N	OPTOMETRIST
299	5	T	OSTEOPATH
314	5	N	PHARMACIST

#	EDlevel	Family	Title
322	5	T	PHYSICIAN
329	5	N	PODIATRIST
338	5	T	PRIEST
345	5	T	PSYCHIATRIST
346	5	V	PSYCHOLOGIST
350	5	T	RABBI
394	5	T	SPEECH-LANGUAGE PATH
405	5	N	SURGEON

Appendix D

Letter Documenting Permission to Administer Two Inventories

January 4, 1991

Mrs. Carla Hattan
Assistant Director
Career Development and Placement Office
Fort Hays State University
Picken Hall 100
600 Park
Hays, KS 67601

Dear Mrs. Hattan:

This letter is to verify our discussion by phone on December 18, 1990, and to provide documentation indicating I was given permission to administer two inventories to selected groups of students that utilize the DISCOVER program during the spring semester of 1991.

It is of understanding that the information from the two inventories will be used only as a part of a thesis fo completion of my masters degree.

Thank you and your staff for permitting me to administer the two inventories in your office.

Sincerely,

Elaine F. Engel
Graduate Student, Counseling

Appendix E

Letter of Permission from Assistant Director

of Career Development and Placement Service

January 15, 1991

Elaine:

You have my permission to administer two inventories to individuals (who wish to participate) that come into the Career Development and Placement Office during the spring semester 1991 for the use of the DISCOVER.

Sincerely,

Carla J. Hattan, Assistant Director
Career Development and Placement Service

Appendix F

World of Work Graph

WORLD OF WORK

The graph represents only broad families (categories). There are thousands of occupations in each family. There are only a couple hundred various majors from which to choose, but one major can prepare you for many occupations. Adding a minor or supporting courses can open up many more opportunities.